Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

markers, including CRP, ferritin, D-dimer, IL-6, LDH, platelet count, and lymphocyte count, all showed various levels of improvement at day 7 after SBI-101. A comprehensive profiling of 200 exploratory biomarkers and immune cell subsets over timepoints pre- and post-treatment will be presented to characterize the pharmacokinetic and pharmacodynamic effects of SBI-101 on the immune system. Overall, these preliminary results suggest ex vivo MSC therapy carries significant promise and warrants further study in the treatment of patients with severe COVID-19 requiring CRRT.

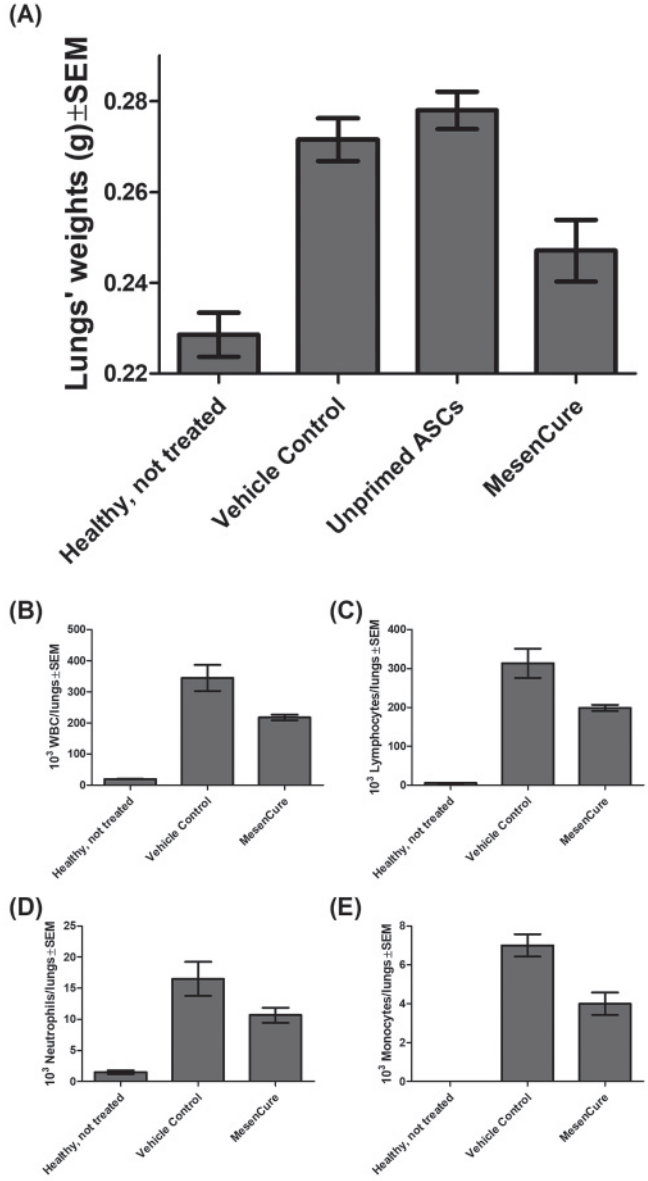

Fig. 1 (abstract 10). MesenCure effect in ALI model animals. MesenCure was injected 6 hours post-induction of an ALI model in C57BL mice by IT injection of LPS. Animals were sacrificed 18 hours post-treatment. (A) The effect of MesenCure on the lungs' weights was measured following lung harvesting from treated model animals compared to lungs harvested from healthy non-treated animals and model animals injected with Vehicle Control or unprimed ASCs. (B–E) The effect of MesenCure on the leukocytes' counts in the lung fluids was measured on bronchoalveolar lavage fluids (BALF) harvested from treated model animals and subjected to complete blood count protocol in comparison to BALF harvested from healthy non-treated animals, as well as model animals injected with the Vehicle Control item. Results are presented for (B) total white blood cells (WBC), (C) lymphocytes, (D) neutrophils, and (E) monocytes.

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Somatic Stem Cells: Mesenchymal Stem/Stromal Cells

MESENCURE—AN ENHANCED CELL THERAPY EXPLICITLY DEVELOPED FOR TREATING ACUTE RESPIRATORY DISTRESS IN COVID-19: FROM BENCHTOP TO BEDSIDE

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Keywords: COVID-19, ARDS, Mesenchymal stromal cells.

Background & Aim: Mesenchymal stromal cells (MSC) have attracted much attention for treating pulmonary manifestations of Covid-19, for which they are already tested in clinical studies. These efforts are, nonetheless, overshadowed by studies predating the pandemic that failed to show MSC efficacy in treating acute respiratory distress syndrome (ARDS). Also, concerns regarding the hemocompatibility of MSCs were raised vis-à-vis their source tissue and administration route, especially in coagulopathic Covid-19 patients. With this in mind, and relying on years of MSC-related experience and manufacturing capacity of clinical-grade material, and technologies developed for the efficient and standardized isolation and cultivation of MSCs, Bonus BioGroup has developed MesenCure—an enhanced allogeneic MSC product for intravenous (IV) injection designed to treat ARDS in Covid-19 patients.

Methods, Results & Conclusion: MesenCure is based on adipose stromal cells (ASC) primed by a combination of biological and physical conditions to improve their potency, stability, and safety.

Our data shows that MesenCure, but not unprimed ASCs, have alleviated edema in an acute lung injury (ALI) model by 60% (Fig. 1A) and reduced the leukocytes' counts in the lung fluids by 40% (Fig. 1B-1E). Three IV administrations of MesenCure were shown to rescue animals from a lethal ALI (Fig. 2). In vitro, MesenCure inhibited the proliferation of activated T cells by >83% compared to <15% inhibition by unprimed ASCs (Fig. 3). Under refrigeration, MesenCure cells retained their immunomodulatory capacity longer than unprimed ASCs representing a more stable product for transplantation with a longer shelf-life. MesenCure cells' hemocompatibility was found to resemble that of bone marrow MSCs, regarded as safe for IV injection. This was evidenced by 50% lower levels of coagulation factor 3 at the mRNA, protein, and activity levels, as well as a >2-fold higher level of tissue factor pathway inhibitor, expressed on MesenCure cells compared to unprimed ASCs. A GLP toxicity study found MesenCure to be well-tolerated.

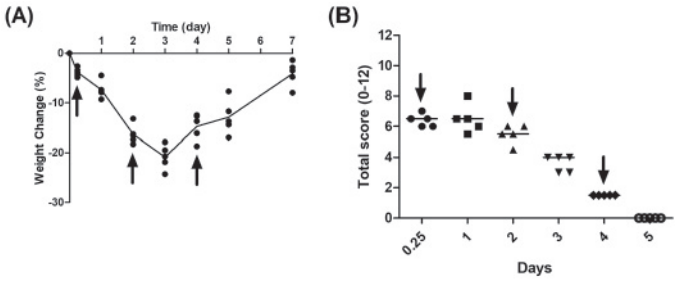

Fig. 2 (abstract 10). The effect of repeated MesenCure administrations in a lethal ALI model. MesenCure was injected thrice in 48 hours' intervals starting 6 hours (0.25 days) post model induction and two and four days after that (arrows designate administrations). Animals' survival, weights, and clinical scores were recorded until complete recovery was measured on Day 7, three days after the final injection. Results are presented as (A) individual and averaged weight changes (%) in respect to Day 0, as well as (B) individual and median clinical scores reflecting the animals' overall health as a combination of their appearance, activity, response, and respiratory quality.